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**Electron Spin Resonance measurements based on micro-SQUID detection and coplanar waveguide excitation**[1] GUANG YUE, IRINEL CHIORESCU, JORGE BARREDA, LONGQIAN HU, Department of Physics and NHMFL, Florida State University, Tallahassee, Florida 32306, USA, LEI CHEN, SIMIT, Chinese Academy of Sciences, Shanghai, China 200050, SYLVAIN BERTAINA, Aix-Marseille Université, CNRS, IM2NP UMR7334, 13397 Marseille, France — Sensitive detection of spin resonance is of paramount importance for the field of spin-based quantum computing. We combine the sensitivity of a high field, weak link SQUID[2] with the versatility of an on-chip coplanar waveguide. The SQUID is in close proximity of an antenna from a coplanar waveguide and the studied spin system. Both the SQUID and the waveguide are fabricated from a Nb film on top of a Si substrate, such that the setup works in high magnetic field applied parallel to device plane. This setup has the benefit of potential wide bandwidth microwave capability compared with the cavity based ESR setup, and has taken the advantage of the micro-SQUID technique which has high sensitivity due to the direct measurement on the magnetization of the sample. The technique will be implemented to study coherence properties of quantum spins in single ions or molecular magnets[3]. We report preliminary results on diluted spins distributed in a non-magnetic matrix.

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[2]L. Chen et al, **Nanotechnology** 21, 405504 (2010)
[3]M. Martens et al, **arxiv:1505.03177**

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